

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Ilwhan Park et al

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Examiner: Tung S. Lau

Title: "AUTOMATIC ACTIVATION OF TOUCH SENSITIVE
SCREEN IN A HAND HELD COMPUTING DEVICE"

Assistant Commissioner for Patents

Washington, D.C. 20231

Clean Version Of Claims

1. A method of operating a hand held computing device, the method comprising:

providing a hand held computing device with an electrical power conservation system, with an LCD display, with a touch sensitive screen and with a stylus for use in entering information into the computing device through the touch screen;

sensing whether the stylus is positioned in a stylus receiving receptacle provided on the device; and

when the stylus is positioned within the receptacle, taking at least one of the following set of actions: (i) deactivating the touch screen; (ii) deactivating the LCD display; and (iii) activating the power conservation system.

2. The method of claim 1, further comprising:

when said stylus is not positioned within said receptacle, taking at least one of the following actions: (iv) activating said touch screen for entry of information; (v) activating said LCD display; and (vi) deactivating said power conservation system.

3. The method of claim 1, further comprising:

when said stylus is not positioned within said receptacle:

determining if said system is presently in an active state;

when said system is presently in an active state, taking at least one of the following actions: (iv) activating said touch screen for entry of information; (v) activating said LCD display; and (vi) deactivating said power conservation system;

when said system is not presently in an active state, determining an accumulated time during which said stylus has continuously not been within said receptacle and said device has not been in an active state, and comparing the accumulated time with a selected time-out value;

when the accumulated time is greater than the time-out value, taking at least one of said actions (i), (ii) and (iii);

when the accumulated time is not greater than the time-out value, taking at least one of the actions (iv), (v) and (vi)..

4. The method of claim 1, further comprising sensing whether said stylus is positioned within said receptacle by a procedure comprising at least one of the following actions:

(a) comparing an impedance measured for said receptacle with an impedance value associated with said receptacle when said stylus is not positioned within said receptacle;

(b) comparing an electrical conductivity measured for said receptacle with an electrical conductivity value associated with said receptacle when said stylus is not positioned within said receptacle;

(c) comparing a capacitance measured for said receptacle with a capacitance value associated with said receptacle when said stylus is not positioned within said receptacle;

(d) comparing a mass measured for said receptacle with a mass value associated with said receptacle when said stylus is not positioned within said receptacle;

(e) determining if an electromechanical switch associated with said receptacle is in a selected switch state when said stylus is not positioned within said receptacle;

(f) determining if an electromagnetic sensor associated with said receptacle senses absence of a selected ferromagnetic component embedded in said stylus when said stylus is not positioned within said receptacle; and

(g) determining if light in a selected wavelength range is received by an optical sensor associated with said receptacle when said stylus is not positioned within said receptacle.

5. The method of claim 1, further comprising sensing whether said stylus is positioned within said receptacle by a procedure comprising at least one of the following actions:

(a) comparing an impedance measured for said receptacle with an impedance value associated with said receptacle when said stylus is positioned within said receptacle;

(b) comparing an electrical conductivity measured for said receptacle with an electrical conductivity value associated with said receptacle when said stylus is positioned within said receptacle;

(c) comparing a capacitance measured for said receptacle with a capacitance value associated with said receptacle when said stylus is positioned within said receptacle;

(d) comparing a mass measured for said receptacle with a mass value associated with said receptacle when said stylus is positioned within said receptacle;

(e) determining if an electromechanical switch associated with said receptacle is in a selected switch state when said stylus is positioned within said receptacle;

(f) determining if an electromagnetic sensor associated with said receptacle senses proximity of a selected ferromagnetic component embedded in said stylus when said stylus is positioned within said receptacle; and

(g) determining if light in a selected wavelength range is received by an optical sensor associated with said receptacle when said stylus is positioned within said receptacle.

6. A system of operating a hand held computing device, the system comprising:

a hand held computing device having a electrical power conservation system, an LCD display, a touch sensitive screen and a stylus for use in entering information into the computing device through the touch screen;

a stylus sensor for sensing whether the stylus is positioned in a stylus receiving receptacle provided on the system; and

a computer that is programmed so that, when the stylus is positioned within the receptacle, the system takes at least one of the following set of actions: (i) deactivating the touch screen; (ii) deactivating the LCD display; and (iii) activating the power conservation system.

7. The system of claim 6, wherein said computer is programmed so that, when said stylus is not positioned within said receptacle, said system takes at least one of the following actions: (iv) activating said touch screen for entry of information; (v) activating said LCD display; and (vi) deactivating said power conservation system.

8. The system of claim 1, wherein said computer is programmed so that, when said stylus is not positioned within said receptacle:

said computer determines if said system is presently in an active state;

when said system is presently in an active state, said system takes at least one of the following actions: (iv) activating said touch screen for entry of information; (v) activating said LCD display; and (vi) deactivating said power conservation system;

when said system is not presently in an active state, said computer determines an accumulated time during which said stylus has continuously not been within said receptacle and said device has not been in an active state, and said computer compares the accumulated time with a selected time-out value;

when the accumulated time is greater than the time-out value, said system takes at least one of said actions (i), (ii) and (iii); and

when the accumulated time is not greater than the time-out value, said system takes at least one of the actions (iv), (v) and (vi).

9. The system of claim 6, wherein said system senses whether said stylus is positioned within said receptacle by a procedure comprising at least one of the following actions:

(a) comparing an impedance measured for said receptacle with an impedance value associated with said receptacle when said stylus is not positioned within said receptacle;

(b) comparing an electrical conductivity measured for said receptacle with an electrical conductivity value associated with said receptacle when said stylus is not positioned within said receptacle;

(c) comparing a capacitance measured for said receptacle with a capacitance value associated with said receptacle when said stylus is not positioned within said receptacle;

(d) comparing a mass measured for said receptacle with a mass value associated with said receptacle when said stylus is not positioned within said receptacle;

(e) determining if an electromechanical switch associated with said receptacle is in a selected switch state when said stylus is not positioned within said receptacle;

(f) determining if an electromagnetic sensor associated with said receptacle senses absence of a selected ferromagnetic component embedded in said stylus when said stylus is not positioned within said receptacle; and

(g) determining if light in a selected wavelength range is received by an optical sensor associated with said receptacle when said stylus is not positioned within said receptacle.

10. The system of claim 1, wherein said system senses whether said stylus is positioned within said receptacle by a procedure comprising at least one of the following actions:

(a) comparing an impedance measured for said receptacle with an impedance value associated with said receptacle when said stylus is positioned within said receptacle;

(b) comparing an electrical conductivity measured for said receptacle with an electrical conductivity value associated with said receptacle when said stylus is positioned within said receptacle;

(c) comparing a capacitance measured for said receptacle with a capacitance value associated with said receptacle when said stylus is positioned within said receptacle;

(d) comparing a mass measured for said receptacle with a mass value associated with said receptacle when said stylus is positioned within said receptacle;

(e) determining if an electromechanical switch associated with said receptacle is in a selected switch state when said stylus is positioned within said receptacle;

(f) determining if an electromagnetic sensor associated with said receptacle senses proximity of a selected ferromagnetic component embedded in said stylus when said stylus is positioned within said receptacle; and

(g) determining if light in a selected wavelength range is received by an optical sensor associated with said receptacle when said stylus is positioned within said receptacle.